Temporal Volume-Density Reciprocity

A Recursive Law Derived from Stalagmite Mass Dynamics

Principle:
If density is relative to time, so is volume.

Formal Expression:
Mass (M) = Density(t) × Volume(t)
If M is constant, then Volume(t) = M / Density(t)

Recursive Law:
As density decreases over time, volume must expand to preserve total mass.

Natural Example:
A stalagmite's growth reflects this principle: as the source water's mineral density decreases, the structure continues growing by expanding its volume.

Mathematical Model:
D(t) = D■ · e^(–kt)
V(t) = M / D(t)

Where:
D■ = Initial density (e.g., 2.7 g/cm³ for calcite)
k = Decay constant (e.g., 0.0003/year)
t = Time (years)

This recursive model will be embedded in the Recursive Atlas as an eternal reference.